

CLAIMS

What is claimed:

1. A high strength drill pipe joint suitable for power transmission and data acquisition and transmission, comprising:
- 5 a. a first length of drill pipe comprising a box end and a pin end and second length of drill pipe comprising a pin end and a box end for interconnection as tool joints;
- 10 b. the box ends comprising an external face, a counterbore, a tapered thread, and an internal shoulder section proportioned to sustain at least a nominal makeup torque;
- 15 c. the pin ends comprising an external face, a nose section, a tapered thread, a base section; and an external shoulder proportioned to sustain at least a nominal makeup torque;
- d. the distance between the internal shoulder and external face of the box end being precisely greater than the distance between the external face and shoulder of the pin end so as to describe a precise distance between said internal shoulder and said external face; *of the pin end. under depth of drill pipe are connected*
- 20 e. the first drill pipe comprising at least one means for power transmission or for data acquisition or transmission located in precise reference to the internal shoulder within its box end and the second drill pipe comprising at least one means for data acquisition or transmission located in precise reference to the external face of its pin end; and *power / trans*
- 25 f. when the tool joint is made up, said internal shoulder of the box end and said external face of the pin end coming into repeatable, predetermined proximity in such a manner that the distance

between the respective means for data acquisition or transmission ^{data} is substantially constant, enabling precise tuning of said means.

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internal shoulder, and the tapered thread are further proportioned to sustain a nominal makeup torque;

10. The high strength drill pipe joint of claim 1, wherein, when the means for data acquisition or transmission are located within nose section of the pin end of the drill pipe, the nose section, tapered thread, base section, and external shoulder are further proportioned to sustain a nominal makeup torque.

11. The high strength drill pipe joint of claim 9, wherein said joint is capable of sustaining an additional torque of approximately 1.25 times the nominal makeup torque.

12. The high strength drill pipe joint of claim 10, wherein said joint is capable of sustaining an additional torque of approximately 1.25 times the nominal makeup torque.

13. The high strength drill pipe joint of claim 1, wherein, when an additional torque of approximately 1.25 times the nominal torque is applied to the joint, the predetermined distance between the respective means for data acquisition or transmission is less than .010 inches.

14. The high strength drill pipe of claim 1, wherein the data acquisition means is selected from the group consisting of conductors, accelerometers, potentiometers, gamma ray sensors, thermocouples, pressure transducers, inclinometers, magnetometers, chemical sensors, or acoustic transducers.

15. The high strength drill pipe of claim 1, wherein the data transmission means is selected from the group consisting of conductors, or optical, electrical, electromagnetic, or acoustic sending and receiving means.

16. A high strength drill pipe joint suitable for power transmission and data acquisition and transmission, comprising:

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- a. a first length of drill pipe comprising a box end and a pin end and second length of drill pipe comprising a pin end and a box end for interconnection as tool joints;
- b. the box ends comprising an external face, a counter bore, a tapered interlocking thread capable of producing at least a nominal makeup torque, and an internal shoulder section;
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- c. the pin ends comprising an external face, a nose section, a tapered interlocking thread capable of producing at least a nominal makeup torque, a base section; and an external shoulder;
- d. the distance between the internal shoulder and external face of the box end being precisely greater than the distance between the external face and shoulder of the pin end so as to describe a precise distance between said internal shoulder and said external face, *when said box & pin ends are connected.*
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- e. the first drill pipe comprising at least one means for power transmission or for data acquisition *for?* or transmission located in precise reference to the internal shoulder within its box end and the second drill pipe comprising at least one means for *power trans* data acquisition or *data acquit* transmission located in precise reference to the external face of its pin end; and
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- f. when the tool joint is made up, said internal shoulder of the box end and said external face of the pin end coming into repeatable, predetermined proximity in such a manner that the distance between the respective means for data acquisition *+ mm* or transmission *pass* is substantially constant, enabling precise tuning of said means.
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